Impact of hydrochloric acid instillation on the salvage of infected central venous catheters (CVC) in children with acute lymphoblastic leukaemia.

Abstract:

Background: Bacteraemia associated with indwelling central venous catheters (CVC) causes significant morbidity in children with cancer. Hydrochloric acid (HCl) instillations have been reported to salvage CVCs with antibiotic-refractory infection. We implemented this treatment in 2002. The impact on the survival of CVCs has been evaluated in a retrospective cohort study of children with acute lymphoblastic leukaemia (ALL).

Methods: Children with newly diagnosed ALL during 1999-2005 having their first CVC inserted before (n = 16) and after (n = 24) the introduction of the procedure were studied. All bacteraemic episodes were reviewed, recording bacteriological findings and treatment, and the time to premature or planned removal of the CVC was determined.

Results: In the comparison cohort, 31.0% (9/29) of bacteraemic episodes led to removal of the CVC, compared to 5.5% (2/36) in the intervention cohort (p = 0.01). Thus, the rate of catheter loss due to infection fell from 56.3% (9/16) to 8.3% (2/24) after introducing HCl treatment (p = 0.0025). Overall, the premature catheter removal rate fell from 75.0% (12/16) to 45.8% (11/24) (p = 0.10). Analysed in a CUSUM plot the reduced frequency of premature CVC removal evidently coincided with the introduction of the procedure. In a subgroup
analysis of 21 monobacterial infections with coagulase-negative staphylococci, a decrease in systemic and lock antibiotic therapy was found. No adverse events were noted.

Conclusions: HCl instillations significantly reduced the need to remove and replace CVCs. The procedure is practical, appears to be safe, and may reduce the consumption of antibiotics.